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09/770,725	01/26/2001	Li Yang	791_130	6015

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EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/770,725
Filing Date: January 26, 2001
Appellant(s): YANG ET AL.

Kevin C. Brown
For Appellant

MAILED
AUG 21 2006
GROUP 1700

SUPPLEMENTAL EXAMINER'S ANSWER

Responsive to the Reply Brief filed on February 21, 2006, a supplemental Examiner's
Answer is set forth below:

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

It is brought to the Board's attention that the rejection grounds presented in this Answer are considered to constitute a new ground of rejection as set forth in further detail below.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,350,544	TAKAMI et al	2-2002
6,083,644	WATANABE et al	7-2000
6,361,822	KUROSE et al	3-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

NEW GROUND(S) OF REJECTION

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takami et al (U.S. Patent 6,350,544) in view of Watanabe et al (U.S. Patent 6,083,644) in further view of Kurose et al (U.S. Patent 6,361,822).

Regarding claims 1 and 17, Takami et al. is directed to a nonaqueous lithium secondary battery comprising a positive and negative electrode laminated through a separator (see abstract and Figure 1). Regarding claims 1, 3, 4, and 17, the positive electrode material is LiMn_2O_4 , which has cubic spinel structure (see col. 4, line 49). Regarding claims 1, 5, 6, and 17, the negative electrode active material is a graphitized carbon fiber (see col. 7, line 40). Regarding claims 1, 2, and 17, the battery contains an electrolyte comprising lithium hexafluorophosphate (see col. 10, line 43).

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Takami et al. do not expressly teach the water content of each electrode as recited in claims 1 and 17, or that the battery has a capacity of 2Ah or more, as recited in claims 8-11.

However, the latter limitation is not considered to distinguish over Takami because the claimed battery capacity merely represents the scaling of the absolute size of the battery of Takami. Such large battery sizes are known to be useful in specific applications, such as in electric vehicles. Generally, changes in size are not considered to patentably distinguish over a reference (MPEP §2144.04(IV)).

Furthermore, in column 14, lines 48-52, Watanabe et al. teach that a positive electrode mixture and a negative electrode mixture both have moisture contents of 50 ppm or less.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Watanabe et al. would motivate the artisan to use electrodes having a moisture content of less than 50 ppm in the battery of Takami et al. In column 14, line 49 et seq., Watanabe et al. teach that it is “preferred...from the point of cycle property” that the electrodes have such a low moisture content. Additionally, the combined moisture content of the electrodes would inherently be lower than 5,000 ppm in case of heating the electrodes at 25 to 200°C, and lower than 1,500 ppm in case of heating at 200°C to 300°C, as recited in claims 1 and 17.

Furthermore, the Kurose et al. patent is directed to lithium secondary batteries. The reference discloses at column 2, line 14 that “[u]se of an active material in a state with a lot of absorbed moisture in battery causes problems such as decrease in a charge/discharge capacity of the battery, increase in internal resistance, and deterioration of the preservation property.” As such, the Kurose patent is taken as evidence that water management is a known problem in

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lithium secondary batteries, regardless of the specific electrode materials. Further, at column 2, line 12, Kurose specifically identifies “nickel-containing lithium composite oxides” as “tend[ing] to absorb moisture.” This material is disclosed at column 4, line 42 of Takami and can be considered to be substantially equivalent to LiMn_2O_4 , also disclosed by Takami (and recited in claims 1 and 17).

Regarding claims 12-16, which recite that the battery is used in an electric automobile, these claims do not have to be accorded patentable weight because they recite an intended use and do not further limit the structure of the battery (MPEP §2114).

(10) Response to Argument

Initially, it is acknowledged that the Examiner’s reliance on the Kurose reference herein and in the previous Examiner’s Answer is considered to constitute a new ground of rejection in accordance with MPEP 1207.03. Appellants are advised to carefully review the new conclusory paragraphs at the end of this Answer since positive action is required by Appellants to maintain the status of the present appeal.

Turning now to the rejection, regarding the Watanabe reference, Appellants assert that there is no indication that the moisture content feature of Watanabe would have any significance in batteries which do not employ positive and negative active materials disclosed in Watanabe. However, it is submitted that the presence of moisture in lithium secondary batteries is a known problem that is appreciated by the prior art. The Kurose patent, cited above, clearly teaches that moisture absorption is a problem in batteries containing nickel-containing lithium composite

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oxides. This material is very similar to the lithium manganese oxide disclosed by Takami and recited in claims 1 and 17. Furthermore, it is submitted that it is generally known in the art that all materials to be used in a lithium battery must be handled carefully and in inert atmospheres. Alkali metals, in particular lithium, are known to react with moisture contained in the air. Additionally, lithium batteries universally contain nonaqueous electrolytes. As such, it is well known in the art that keeping the moisture level as low as possible within a lithium battery is advantageous both to safe handling of battery components and to battery performance. Therefore, the teachings relating to electrode water content in Watanabe are believed to be relevant to the battery of Takami, as set forth in the above rejection.

Appellants further assert that the material disclosed in Watanabe for use in making the negative electrode “can readily absorb water, unlike the carbonaceous material which the negative electrode active substance recited in claim 1 comprises.” However, Appellants do not provide further support for this statement. Furthermore, regardless of the affinity of the carbonaceous material of Takami for absorbing water, the artisan would still have motivation, stated above, for making the electrode as water-free as possible. Appellants further state regarding the Watanabe reference that “heating to more than 200 degrees C is not realistic in a case where a battery is assembled after heating, because binder contained in the electrode would normally be decomposed or would deteriorate at such temperatures.” However, Watanabe merely requires heating from 80-350 degrees, more preferably 100-250 (col. 14, line 46). Further, it is noted that both electrodes of Watanabe may contain a binder (see col. 15, lines 8 and 27). In performing the heat-treatment of Watanabe, the artisan would be sufficiently skilled to adjust the temperature so as to not decompose the binder thereof. As such, Appellants’

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apparent assertion that it would not be obvious to perform the electrode heat treatment of Watanabe on the electrodes of Takami is not persuasive.

In the Reply Brief of February 21, 2006, Appellants make reference to a declaration filed under 37 CFR 1.132 that was entered prior to appeal in this application on July 22, 2005. However, the declaration was not discussed in the Appeal Brief. The declaration shows metal dissolution in HF-containing electrolyte of lithium manganese oxide as compared with lithium nickel oxide. However, it is submitted that this comparison is not germane to the outstanding grounds of rejection. The instant claims recite a lithium manganese oxide positive electrode material. Takami, the primary reference in the 35 USC 103 rejection, discloses a lithium manganese oxide material as well as a lithium nickel oxide material (see col. 4, line 47). In the declaration Appellants compare dissolution of a lithium manganese oxide and lithium nickel oxide in an HF-containing electrolyte solution. However, this comparison is not needed or necessary to address the rejection grounds on appeal. According to Appellants, the declaration shows that lithium manganese oxide and lithium nickel oxide are not “substantially equivalent” as asserted by the Examiner. It is true that as shown in the declaration, the materials dissolve in HF in different amounts. However, this fact is not relevant to the outstanding rejection. The Kurose reference, which discloses “nickel containing lithium composite oxides,” is used only in an evidentiary manner in the rejection with regard to the level of skill in the art. Even if it would be proposed to substitute the LiNiO_2 of Kurose for the LiMn_2O_4 of Takami, such step would not be necessary because Takami also discloses LiNiO_2 . As such, the declaration is not necessary to address the grounds of rejection on appeal.

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In addition, for purposes of completeness in responding to each of Appellant's arguments, it is the Examiner's position that LiNiO_2 and LiMn_2O_4 are "substantially equivalent" in the context of the present rejection because they are both known to absorb water and must be handled with care. Appellants do not seem to dispute that both materials absorb water. Further, in the instant specification at page 8, line 26, it is stated that "[p]referable compounds to be used for the positive electrode active substance are lithium transition metal compound oxides such as **lithium manganese oxide (LiMn_2O_4)**, lithium cobalt oxide (LiCoO_2), **lithium nickel oxide (LiNiO_2)**, and the like" (emphasis added). Therefore, it is apparent that Appellants considered the two materials to be similarly useful as positive electrode materials of the present invention. As such, the above can be regarded as intrinsic evidence of the similarity of the materials.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (9) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one

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of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,



Jonathan Crepeau
Primary Examiner
Art Unit 1746

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A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

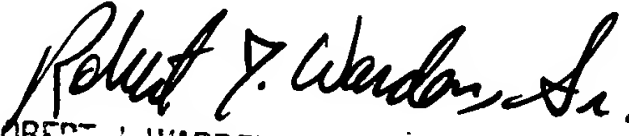
Conferees:

Michael Barr
Supervisory Patent Examiner
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*Director's Designee for
New Grounds of Rejection*